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Determination of candidate science teachers' attitudes towards computer assisted teaching

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Abstract

The purpose of study is to determine candidate science teachers' attitudes towards computer assisted teaching and also to reveal whether teacher candidates' attitudes show a difference according to gender. The sample of the research is consisted of total 117, candidate science teachers who attended a big university in Ankara. In this study descriptive model was used. Computer assisted teaching attitude scale which includes 25 items has been used as the data gathering tool. One of the results obtained in the research is that teacher candidates' attitudes towards computer assisted teaching change according to the items in the scale. Another result obtained in the research is teacher candidates' point averages which have taken from the scale indicate a meaningful difference according to gender.

Keywords: Computer assisted teaching, candidate science teacher, attitude, gender

1. Introduction

The place of computer in learning-teaching environment in today's information age is inarguably important. The amount of information which increases incrementally, the increase in the number of individuals who want to get this information rapidly and correctly urge the educators and experts to use different teaching methods and different technologies (Usun, 2000). One of those methods and technologies is computer assisted teaching method.

Computer assisted education is defined as a teaching method in which the computers are used in the activities related to the learning-teaching and school management (Demirel et al., 2001) and the technology is used as the learning environment, which strengthens/improves the teaching process and the motivation of the students, from which the students benefit based upon their own learning rates and in which the students apply self-learning principles (Sahin &Yildirim, 1999).

Computer teaching as an aim involves a wide field which can be ranged such as 'what the computers are', 'how they work', 'how the different prepared programs and internet applications are used', 'with what basic principles the programming languages work' and 'with what methods the programming is carried out' and which can be enlarged. As an educational appliance, the computers are utilized/benefited in the teaching-learning process and in the fields such as the assessment and evaluation, counseling and also in the education services management (Usun, 2000).

In the science lessons, it is important to arrange the learning environment in the manner which helps the students reach the information by doing-experience, to facilitate the resource diversity and the access to these, to enable to

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acquire information at first-hand, to evaluate the information and to use many elements of the educational technology in order to raise creative individuals who benefit from the technology. However, the tools and materials of educational technology should be significantly utilized/benefited in the science lessons for the development/improvement of creative characteristics of students; multi-directional perception, interpretation of the events and objects by the students and the increase in the interest of the students in the lesson (Akpinar et al., 2005). Therefore, the science lessons which involves the scientific concepts and principles excessively are among the most suitable lessons in terms of the application of computer assisted teaching. (Demircioglu and Geban, 1996). The content presented in teaching science through the use of computer assisted teaching is also encoded visually. Thus, the student encodes the content presented both verbally and visually and carries out meaningful learning by restructuring these in mind. Thanks to this meaningful learning, both the storage of information and call it again from the memory/mind get easy (Sezgin and Koymen, 2002). In this respect, the best example of the harmony between the science and technology is the computer assisted science teaching (Demirer, 2006).

The purpose of study is to determine candidate science teachers' attitudes towards computer assisted teaching and also to reveal whether teacher candidates' attitudes show a difference according to gender.

2. Method

This research which aims at determining the candidate science teachers' attitudes towards computer assisted science teaching is descriptive research. The survey method is used in the research. This method is used in the researches which try to describe, explain what the events, creatures, organizations, groups and various fields are (Kaptan, 1998).

The sample of the research is consisted of total 117, candidate science teachers who attended a big university in Ankara on the spring term of 2009- 2010 education years.

Computer assisted teaching attitude scale which includes 25 items has been used as the data gathering tool. This scale is a triple Likert-type and consist of expressions as "yes", "no" and "undecided". This scale was prepared by researchers and it was developed according to affective domain steps. While preparing the items in scale used in the research, the area in question was scanned, computer assisted teaching researches are reviewed, a Likert type scale in line with Bloom's Taxonomy was developed by utilizing the old computer assisted teaching attitude scale (Asan, 2002; Erkan, 2004; Çelik and Bindak, 2005; Arslan, 2006; Pala, 2006; Yenilmez and Ersoy, 2008; Başarıcı and Ural, 2009). In order to check the reliability coefficient of the scale, the designed scale was administered to 185 candidate teachers who attended a big university in Ankara. SPSS program was used for this scale's reliability analyze and its value of cronboach alpha was found as .76. For the validity of the scale, the opinions of 5 experts were taken. In addition, factor analyze was made for structure validity.

Independent sample test, frequency and percentage distributions were used to compare data.

3. Results of research

Validity and reliability of the scale is provided, and then scale was applied candidate science teachers. Some results of the candidates' answers were given Table 1.

Table 1. Percent-frequency distribution of the answers to the scale items

Items	Yes		Undecided		No	
	f	%	f	%	f	%
3. I think it is effective to use computer on learning	81	69,2	11	9,4	25	21,4
7. I think that the use of computers in teaching get more harm than benefit	43	36,8	9	7,7	65	55,5
15. In my opinion, computer is so successful tool to call attention to especially the subject being taught	98	83,8	7	6	12	10,2

18. I do not think it would be effective the use of the computer and teaching together in the classroom atmosphere	37	31,6	5	4,3	75	64,1
23. I want to take advantage of computer-assisted teaching	103	88	9	7,7	5	4,3

When Table 1 is examined, it is seen that the candidates' attitudes towards computer assisted teaching vary according to the articles in the scale. For example, 69,2 % of the candidates reply "yes" to the 3. item, 9,4 % of them reply "undecided" to it and 21,4 % of them reply "no" to it. When the replies given to the 7. item are examined, it is seen that 36,8 % of the candidates reply "yes", 7,7 % of them reply "undecided" and 55,5 % of them reply "no". When the replies given to the 15. item are examined, it draws attention that a great part of them such as 83,8 % reply "yes" and on the contrary, only 10,2 % of them reply "no". There is also a similar case in the 23. item. 31,6 % of the candidates reply "yes", 4,3 % of them reply "undecided" and 64,1 % of them reply "no" to the 18. item.

The replies given by the candidate science teachers to the items in the scale vary according to the items and the descriptive data related to the point averages which the candidates get from/on the scale are shown in Table 2.

Table 2. Descriptive data on the attitude scale scores

Test	N	M	S	Mode	Median
Attitude Scale	117	37,46	4,61	39	38

When the data in Table 2 are examined, it is seen that scale point averages, mode and median values of the candidate teachers are relatively approximate (to each other). That average, mode and median values for the data taken from the scale are approximate (to each other) that much is interpreted/commented as the normal distribution of the data (Köklü, Büyüköztürk and Çokluk Bökeoğlu, 2006). In addition, when the highest point which can be got from/on the scale is taken into account, the points which the candidates get from/on the scale are thought to be on the high level and the candidates' attitudes towards the computer assisted teaching are thought to be positive.

In the next stage, it was investigated that whether teacher candidates' attitudes towards computer-assisted teaching show a difference according to gender. The data were evaluated by independent samples t test. The results of independent samples t test were showed Table 3.

Table 3. Independent samples t-test results according to gender

Gender	N	M	S	t	p
Male	30	35,86	4,68	-2,230	.028
Female	87	38,01	4,49		

Data presented in Table 3 shows that the mean of attitude scale scores of male students is M = 35,86 and female students mean score is M = 38,01. As it can be seen from the Table 3, there is a statistically significant difference in favor of female students between the attitude scale scores of the male and female students ($p < .05$, $t = -2,230$).

4. Conclusions and discussion

As a result of the study 25-items computer assisted teaching attitude scale which was provided validity and reliability was developed. Then, prepared scale was applied the science teacher candidates. Finally, attitudes of teacher candidates showed differences according to scale items. Furthermore, it is concluded in the study that the candidate science teachers' attitudes towards computer assisted teaching are positive in general. When the studies conducted with the teachers and candidate teachers are examined, it is seen that the attitudes towards computer and computer assisted teaching are mostly positive (Samancı, 2000; Aşkar & Umay, 2001; Asan, 2002; Erkan, 2004; Arslan, 2008; Pektaş et al., 2008). The attitudes of the teachers towards computer assisted teaching play

determining role in their ability to use the computer in the educational and teaching activities. Therefore, it is crucial to know the attitudes of the teachers and candidate teachers towards the computer (Celik & Bindak, 2005).

Another result obtained in the research is teacher candidates' point averages which have taken from the scale indicate a meaningful difference according to gender. In line with the findings obtained in the research, another result obtained is that there is a significant difference in favor of the female candidate teachers between the scale point averages of female candidate teachers who participate in computer assisted science teaching and point averages of male candidate teachers. When the literature is examined, it is found in some studies that the attitudes differ significantly according to the gender (Shashaani, 1993; Schumacher & Morahan-Martin, 2001; Shapkaa & Ferrarib, 2003; Sadık, 2006).

References

Akpınar, E., Aktamış, H. & Ergin, O. (2005). Students' views on the use of educational technology in science lessons. *The Turkish Online Journal of Educational Technology*, - TOJET January 4 (1),12 ISSN: 1303 - 6521.

Arslan, A. (2006). Attitude scale relation to computer-assisted learning. *Yüzüncü Yıl University Journal of Education*, 3 (2), 24-33.

Arslan, A. (2008). The relationship between candidate teachers' attitudes towards to computer assisted education and self-efficacy beliefs. *Electronic Journal of Social Sciences,*7 (24),101-109.

Asan, A. (2002). Science and social candidate teachers' attitudes towards computer. *Eurasian Journal of Educational Research,* 7 (1).

Aşkar, P. & Umay, A. (2001). Perceived computer self-efficacy of the students in the elementary mathematics teaching programme *Hacettepe University Journal of Education*, 21, 1–8.

Başarıcı, R. & Ural, A. (2009). Attitudes of computer teacher candidates towards computer-aided education. *International Online Journal of Educational Sciences*, 1 (1), 165-176.

Çelik, H. C. & Bindak, R. (2005). Investigation of elementary school teachers' attitudes towards computer according to several variables. *İnönü University Journal of Education,* 6 (10), 27-38.

Demircioglu H. & Geban Ö. (1996), Comparison of computer assisted and traditional problem solving activities in science, *Journal of Hacettepe University Faculty of Education*, 12, 183-185.

Demirel, Ö., Seferoğlu S. & Yağcı E. (2001). *Instructional Technology and Material Development.* Ankara: Pegem A Publishing.

Demirer, A.(2006). A study on the effect of computer-assisted science instruction on students' achievement levels in primary II. grade. Unpublished master thesis, Dicle University, Diyarbakır.

Erkan, S. (2004). Investigation of teachers' attitudes toward the computer. *Manas University Journal of Social Sciences,* 12, 144-145.

Kaptan, F. (1998). *Teaching of science.* Ankara: M.E.B. Publisher.

Köklü, N., Büyüköztürk, Ş. &Çokluk Bökeoğlu, Ö. (2006). *The statistics for the social sciences.* Ankara: Pegem A Publishing.

Pala, A. (2006). Elementary first grade teachers' attitudes toward educational technologies *Manas University Journal of Social Sciences,*16, 177-188.

Pektaş, H. M., Köse, S., Çelik, H., Katrancı, M. & Pektaş, E. (2008). Preservice science teachers' attitudes toward computer-assited education. *II. International Symposium on Computer and Instructional Technology,*Ege University, Faculty of Education,İzmir.

Sadık, A. (2006). Factors influencing teachers' attitudes toward personal use and school use of computers: New Evidence From a Developing Nation. *Evaluation Review*, 30 (1), 86–113.

Şahin, T.Y.& Yıldırım, S. (1999). *Instructional Technology and Material Development.* Ankara: Anı Publishing.

Samancı, O. (2000). A relationship between prospective teachers' recognize the computer and attitudes to use in education. Unpublished master thesis,Atatürk University, Erzurum.

Schumacher, P. & Morahan-Martin, J. (2001). Gender, internet and computer attitudes and experiences. *Computers in Human Behavior, 17*(1), 95-110.

Sezgin, E. & Köymen, Ü. (2002). The effect of Multimedia Courses Software which is Prepared based on Dual Coding Theory on Academic Achievement in Science Teaching. *Sakarya University Journal of the Faculty of Education,*4, 137.

Shapkaa, J. & Ferrarib, M. (2003). Computer-related attitudes and actions teacher candidates. *Computers in Human Behavior,* 19 (3), 319–334.

Shashaani, L. (1993). Gender-based differences in attitudes toward computers. *Computers & Education*, 20 (2), 169–181.

Usun, S. (2000). *Computer-assisted instruction in the world and in Turkey.* Ankara: Pegem A Publishing.

Yenilmez, K. & Ersoy, M. (2008). Mathematics Teachers' Attitudes Toward Computer Assisted Education. Proceedings of 8th International Educational Technology Conference, 600-603.